

At pages 6 and 7 of the previous response attorney for applicant also argued that the allegedly obvious modification of Amimori et al would change (eliminate) the mechanism (operative principle) by which the articles of Amimori et al allow removal of fingerprints from a surface. In answer to this argument, at the top of page 6 of the final rejection, the Examiner provides two different rebuttals:

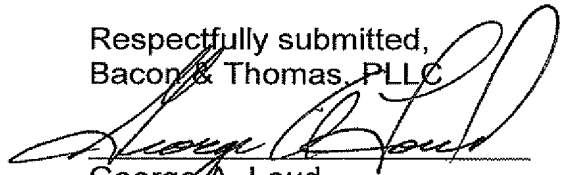
"[1] As stated above Applicant has not provided any evidence that the materials used in Amimori have a "very low" wet tension. [2] Also, Applicant has not shown how the use of a higher wet tension material in Amimori would alter the invention of Amimori."

The first point raised by the Examiner, regarding burden of proof, has already been addressed above. The Examiner's second point seems to ignore the data at column 31 of Amimori on which the Examiner originally relied. The results of tests reported by Amimori at column 31, lines 17-21, demonstrate one reason why the extremely low surface tension fluorine-containing is preferred as taught at column 13, lines 58-65. Further evidence is the consistency between the teaching in the paragraph spanning pages 1 and 2 of applicants' specification, the data at column 31, lines 17-21 of Amimori and the teaching at column 13, lines 58-65 of Amimori.

The rejection of claims 6, 11 and 13 for obviousness, as stated in section 5 of the office action, is traversed for substantially the same reasons given above. Hasuo et al (US 6,716,513) is cited for its disclosure of two different size matting agents. Hasuo et al is directed to a hydrophilic coating and is not relevant to the issue of alleged obviousness of substituting a material providing a wet tension of 25 mN/m or more for the "very low" wet tension material of Amimori.

In conclusion, it is respectfully requested that the Examiner reconsider and withdraw the rejections of record.

Respectfully submitted,
Bacon & Thomas, PLLC



George A. Loud
Registration No. 25,814

Date: November 9, 2009
Bacon & Thomas, PLLC
625 Slaters Lane
Alexandria, VA 22314-1176
703 638-0500

#1

www.fibre2fashion.com
World of Garment - Textile - Fashion

Subscribe for Newsletter | Add to Favorites

Buying Leads | Selling Leads | News | Jobs | Trade Fairs

Search Buying Leads

Select Country

Login | Register | My F2F | Services | Contact us | Membership | Advertise

Home | Browse by Industry | News | Market Watch | Articles | Machinery | Trade Fair | Jobs | IT Solutions | Forum | Directory | Company Links

Channels

Combined privileges
Formerly Global Price Trends

Make your product
a global brand
Make your brands desirable

Home > Articles > Dyes and Chemicals

Fluoro carbons in textile finishing

By : J. Gunaseelan

Free Download | Email Article | Discuss Article | Print Article | Rate Article

Introduction

Nanotechnology has real commercial potential for the textile industry. This is mainly due to the fact that conventional methods used to impart different properties to fabrics often do not lead to permanent effects, and will lose their functions after laundering or wearing.

Nanotechnology can provide high durability for fabrics, because nano-particles have a large surface area-to-volume ratio and high surface energy, thus presenting better affinity for fabrics and leading to an increase in durability of the function. In addition, a coating of nano-particles on fabrics will not affect their breath ability or hand feel. Therefore, the interest in using nanotechnologies in the textile industry is increasing.

The properties imparted to textiles using nanotechnology include water repellence, soil resistance, wrinkle resistance, antibacteria, anti-static and UV-protection, flame retardation, improvement of dye ability and so on.

What Is Fluoro Carbon?

Fluorocarbons are chemical compounds that contain carbon-fluorine bonds. The relatively low reactivity and high polarity of the carbon-fluorine bond imparts unique characteristics to fluorocarbons. Fluorocarbons tend to be only slowly broken down in the environment and therefore many are considered persistent organic pollutants. Many commercially useful fluorocarbons also contain hydrogen, chlorine, or bromine. Stain and water repellency. If the critical surface tension of a solid fabric is greater than or equal to the surface tension of a liquid, the liquid will wet the fabric. If the critical surface tension of the solid is less than surface tension of the liquid, the fabric will repel the liquid.

In the case of solids 'critical surface tension' is used instead of 'surface tension'. Thus, water repellency can be attained when the critical surface tension of the solid is smaller than surface tension of the liquid. For example, when a drop of water is dripped on a cotton fabric, it has been experimentally determined that the surface tension of water and the critical surface tension of cotton are, respectively, 72 dyne/cm and 200 dyne/cm, and, therefore, water readily wets the cotton fiber. However, once the cotton is treated with a fluorocarbon the water repellent relation between them changes. The critical surface tension of water repellent finished cotton is less than the surface tension of water.

Fluorocarbons are organic compounds consisting perfluorinated carbon chain. They tend to decrease the surface tension of the substrate. Fluorocarbons generally lower the surface tensions by forming a thin film of coating around the fiber. They usually are cationic in nature but can also be non-ionic and anionic. Some useful fluorocarbons are perfluoroalkyl acrylate copolymers and their fundamental structure resembles that of acrylic resins. The surface tension of the fluorocarbon water repellent agent is extremely small, about 10 dyne/cm. Therefore, water repellency can be attained and a water drop does not adhere on the treated cotton fiber. Industry started using water repellents based on paraffin, silicone and fluorocarbons. Comparing the three systems, it was found that those belonging to the paraffin type have low water repellent effect at the initial stage and no durability to washing. Those of the silicone type were better than the paraffin-based products but were poor oil repellents. The fluorocarbon-based products were found to endow excellent oil and water repellency.

Addition of crosslinking agents along with the fluorocarbon improved the durability of water and oil repellency. Fluorocarbons can be applied in a number of ways. They can be applied by padding, kiss coating, spray, foam and exhaust. The padding method is one of the most commonly used for treating fabrics with fluorocarbons, because of the consistency and completeness of fabric coverage that can be achieved. In the case of treatment of garments with fluorocarbons, the exhaust or spray methods can be used. Treatment with fluorocarbons has to be carefully carried out, as the quality of the water and oil repellent properties are much dependent on the right kind of processing.

Crosslinking agents are indispensable for improving the durability of fluorocarbon water repellent agents. They prevent the water-repellent agents from dropping out of the fibers on washing, because they form a three dimensional network and attach the water repellent agent to the fiber. Generally, when adhering material B to the surface of material A, the more the physical properties of two materials are similar, the more strongly they

Article Category

Textile
Technology
Industry
Apparel
General
Fashion
Retail
Technical Textiles
Leather, Footwear & Jewellery
Software
Dyes & Chemicals
Handloom and Handicraft
Machinery

Submit Your Article
Contributor's Profile
Contributor's Login
Subscribe for Newsletter
RSS Feeds
Disclaimer

Find Buyer/Seller of:

Cotton Fabric
Resins

Dyes Buying / Selling Offers

Calcium Hypochlorite
Solvent Dyes
Wrinkle resistance

More

Top 5 Dyes Buyer

India, Pakistan, Bangladesh,
Turkey, China
View All Buyers

Top 5 Dyes Seller

India, China, Taiwan, Turkey,
Iran
View All Sellers

Latest Articles



Read on...



Read on...

Submit
ARTICLES
about your
products
& services

Most Downloaded Articles

Bamboo ...
Textile Finishes and ...
Quality Assessment in Woven
Fabrics for the Garment ...
Quality Requirements for
Hosiery ...
Moisture Management and ...

#2

Unit Conversion Software Web Widgets Loan Calculator Currency Rates Country Flags Unit Converter Faq Help

UnitConversion.org

UnitConversion.org

Surface Tension Converter

Converters

Switch to Surface Tension Conversion Table

Sort

Search

No Ads

From: 25 To: 25

Ads by Google

Free Unit Conversions

Convert Units of Measurement With Google. Search On.
www.Google.com/Conversion

Contact Angle Meter

DataPhysics Contact angle meters surface tension, bubble tensiometer
www.FDsc.com/product.htm

Unit Converter for iPhone

900+ unit and currency conversions at your finger tip!
www.arizona-software.ch/unit

How to make electricity

A shocking new homeowner's kit the electric co's hope u will never own
www.Power4Home.com

Increase Conversions

Transforming Browsers into Buyers Learn to Impact Buying Decisions!
www.Interwoven.com

newton/meter [N/m]
millinewton/meter [mN/m]
gram-force/centimeter [gf/cm]
dyne/centimeter [dyn/cm]
erg/square centimeter [erg/cm^2]
erg/square millimeter [erg/mm^2]
poundal/inch [pdl/in]
pound-force/inch [lbf/in]

newton/meter [N/m]
millinewton/meter [mN/m]
gram-force/centimeter [gf/cm]
dyne/centimeter [dyn/cm]
erg/square centimeter [erg/cm^2]
erg/square millimeter [erg/mm^2]
poundal/inch [pdl/in]
pound-force/inch [lbf/in]

Result:

25 millinewton/meter = 25 dyne/centimeter

How to use Surface Tension Converter

Select the unit to convert from in the input units list. Select the unit to convert to in the output units list. Enter the value to convert from into the input box on the left. The conversion result will immediately appear in the output box.

Bookmark Surface Tension Converter - you will probably need it in the future.

Download Surface Tension Unit Converter

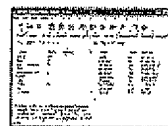
our powerful software utility that helps you make easy conversion between more than 2,100 various units of measure in more than 70 categories. Discover a universal assistant for all of your unit conversion needs - download the free demo version right away!

Make 75,764 conversions with easy-to-use, accurate, and powerful measure unit calculator.

Instantly add a free Surface Tension Converter Widget to your website

It will take less than a minute, is as easy as cutting and pasting. The converter will blend seamlessly into your website since it is fully rebrandable.

Click here for step by step guide of how to put this unit converter on your website



Ads by Google

#1 Rated Torque Converter

Great Prices/ No Middle Person Online Store PH 866-753-0808
arindustries.net

Frequency Converter

Solid-State, Motor-Generator, New, Used, Rentals, Leased
www.AdvancedPowerControls

Voltage Converter 110/220

Heavy Duty Voltage Converters for 110 220 240 volt voltage conversion
www.220converters.com

Monster Torque Converter

CALL 1-800-708-0087 Free Shipping 3 Yr Performance Converter Warranty
MonsterTorqueConverters.com

Travel Converter

The most complete adapter selection 14 years online. Same day shipping.
www.WalkaboutTravelGear.cc



Looking for an interactive surface tension conversion table?

Visit our forum to discuss conversion issues and ask for free help!

Try the Instant categories & units search It gives you results as you type!

Improve Cart Orders

Understand Buyer trends & patterns Download a Free Online Brief Here!
www.Interwoven.com

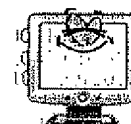
Contact Angle Goniometers

ramé-hart instrument co. Surface Science Instruments
ramehart.com

How to make electricity

\$198 homeowner's kit has power Co's execs calling for a ban on its sale
www.Power4Home.com

Ads by Google



Copyright © 1998-2009 UnitConversion.org

Privacy & Terms | About | Faq | Help | Contact | Link to Us